# THE RME-50

## COMMUNICATIONS RECEIVER

# OPERATING and SERVICE MANUAL

**RADIO MFG. ENGINEERS, INC.**
PEORIA 6, ILLINOIS





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# INSTRUCTIONS FOR INSTALLATION AND OPERATION OF THE RME-50

The RME-50 is a superheterodyne communication type receiver, utilizing 11 vacuum tubes and a vacuum tube rectifier. This receiver incorporates several revolutionary features, notably the tuning arrangement which provides arbitrary calibration of 500 divisions on each range plus calibration of the amateur bands from 80 thru 10 meters. The 50 is supplied complete with a variable selectivity type crystal filter, a calibrated carrier level meter and narrow band FM reception facilities utilizing a ratio detector.

## INSTALLATION

Upon receipt of the receiver it should be carefully checked for any mechanical damage that may have resulted in transit. If any such damage is found a claim should be filed immediately with the carrier. No claim can be filed at the shipping point and the Radio Mfg. Engineers, Inc. cannot be responsible for any damage incurred while in the hands of the carrier.

Before plugging the receiver into a power source the operator should be sure that it is of the proper voltage and frequency. A standard receiver is designed for operation on 115 volts 50/60 cycle current only. Attempted operation on any other voltage or frequency will result in damage to the receiver. A universal Model 50 may be obtained on special order. This model may be operated on either 115 or 230 volt and 25/60 cycle.

On the rear apron of the receiver (Fig. 2) is a 5-prong socket for plugging in the speaker supplied with the set. THE RECEIVER SHOULD NEVER BE TURNED ON WITHOUT THE SPEAKER PLUGGED IN.

## ANTENNA

The terminals on the rear apron (Fig. 2) marked "A-A-G" are for the antenna connection. When the receiver leaves the factory there is a jumper between one of the "A" posts and the "G" post. Good results may be obtained by connecting a wire 50 to 75 feet long to the other "A" post. If a 2 wire feeder system is used the jumper is removed and the two feeders are connected to "A" and "A".

## RELAY AND BREAK-IN TERMINALS

On the rear apron are 2 sets of contacts marked "R" and "B" (See Fig.2). The pair marked "B" are in series with the plate supply. This pair must always be shorted when the receiver is being used, either by a relay, as suggested in Fig. 3, or by a jumper if the remote control feature is not used. This jumper is in place when the set leaves the factory.

The pair marked "R" are relay control terminals. This pair is shorted when the receiver stand-by switch is turned to "Trans". It may be used to control an external relay in conjunction with a suitable external voltage.

## OPERATION

Each control on the RME-50 receiver has a definite function and the operator should familiarize himself with their purpose and operation in order to obtain the best results.

The Cal-O-Matic two speed tuning system is one of the important features of the RME-50

The tuning mechanism uses a preloaded gear train which is entirely free from backlash. The smaller tuning knob rotates approximately five times while the larger one is turning once. This two speed tuning control enables the operator to cover a frequency band at the correct rate with the larger knob and to tune in a weak signal or one partially covered by other signals with the smaller one.

Elimination of the band spread condenser lowers the losses in the RF circuit and therefore gives great gain and greater stability.

Five Amateur bands are directly calibrated on the bandspread dial, but the Cal-O-Matic tuning system also includes an easy and accurate method of logging and frequency between 550 kc and 33,000kc.

The inner half circle on the megacycle scale is divided into five sections. 0 through 4, and the inner circumference of the bandspread dial is marked off in 100 equal divisions. While the red pointer is covering one of the megacycle scale sections the bandspread dial makes one complete revolution. After a station has been heard it can be logged accurately by using the two sets of figures.

For example, if a station is heard on band 5 with the pointer in section 3 of the megacycle scale and with the bandspread dial at 28, that station is definitely logged at 328 because it will always be found at 328 on band 5. Or if a station is logged at 173 on band 3, it will always tuned in on band 3 by turning the knob until the red pointer is in section 1 of the megacycle scale and until 73 comes up on the bandspread dial.

This method of logging enables the operator to return to a station very quickly and since there is no other dial to pre-set the station is always found at the same place.

In order to receive a frequency in one of the Amateur bands it is necessary only to set the band-change switch on the proper band and to tune the receiver until the red pointer is opposite the approximate frequency on the megacycle scale. The Amateur frequency may then be read directly from the calibrated bandspread dial.

Provision is made in the Model RME 50 receiver for correction of calibration of the Band Spread Scale should any variation occur. At the lower left of the Tuning Knobs is a small knob above which is the marking, "Cal". This knob is used in correcting for any variation in calibration of the Amateur Band Scale

as follows:

1..Rotate the Tuning Knob so that the Main Tuning Indicator is in the close vicinity of the Standard or check frequency and then further adjust the Tuning Knob so that the Band Spread Scale reading is at the exact Amateur Band check frequency reading.

2. Rotate the "CAL" clockwise until it is fairly tight. This action clamps the Band Spread Scale in the correct position.

3. Adjust the Tuning Control Knob until the check signal is in exact tune.

4. Rotate "CAL" Knob counter clockwise until all clamping action of the Band Spread dial is removed. The receiver is then ready for regular operation.

THE BAND SELECTOR SWITCH selects the frequency range desired. The range of the receiver is divided into 6 bands. The range covered by each band is as follows:

| | | | | |
|---|---|---|---|---|
| Band 1 | .540 | to | 1.6 MC | American Broadcase |
| Band 11 | 1.6 | to | 2.9 MC | |
| Band 111 | 2.9 | to | 5.4 MC | |
| Band 1V | 5.4 | to | 9.8 MC | |
| Band V | 9.8 | to | 18.0 MC | |
| Band V1 | 18.0 | tp | 33.0 MC | |

Actually these figures do not represent the full range of each band since there is considerable overlap between the end of one band and the start of the next.

The LINE TONE control turns the receiver on and off. As the control is turned clockwise the line switch will close. Continued turning of the knob controls the audio response.

The STAND-BY SWITCH on the extreme right end of the control panel is used to make the receiver inoperative without turning off the line switch. When the control is in the center at "on" the receiver will operate, when it is turned to the right to "Standby" it will be dead. The third position labeled "Trans" also makes the receiver inoperative and, in addition, closes the relay circuit as mentioned previously.

The AUDIO GAIN Control to the left of the stand-by switch is used to adjust the audio volume to the desired level.

Below the control panel is a toggle switch labeled B.F.O. which turns

on the beat frequency oscillator. The beat frequency oscillator is indispensible in the reception of CW signals and is an aid in locating weak phone carriers. When the B.F.O. switch is thrown to ON, AVC (automatic volume control) is removed from the circuit. The gain of the receiver should be controlled with the RF gain control when CW signals are being received. Full automatic control of the receiver gain is obtained only when the B.F.O. switch is in the OFF position and when the R.F. gain control is in its maximum clockwise position. (See following paragraph on Carrier Level Meter).

The pitch of the beat frequency may be varied by means of the control labeled B.O. PITCH.

The CARRIER LEVEL meter is supplied with the Model 50. This meter indicate the average value of the carrier being received. The meter is calibrated in db as well as in conventional numbers. As in previous RME models a signal difference of 1-R is equivalent to 6 db., and R-9 is equivalent to 100 microvolts input to the receiver. A phone signal should always be tuned so as to give a maximum reading on the meter. The meter should be adjusted to zero with the antenna disconnected by means of the screw on the rear of the chassis (Fig. 2). It should be noted here that the accurate functioning of the CARRIER LEVEL meter depends on the setting of the R.F. GAIN control. The R.F. GAIN control should always be rotated to the maximum clockwise position and left there when it is desired to use the CARRIER LEVEL meter (this position is marked approximately by the designation AVC).

On the control panel (lower) is a jack marked "PHONES". Any pair of good headphones may be plugged into this jack for headphone reception. When the phones are plugged in the speaker is automatically cut out.

The CRYSTAL FILTER has two controls. The top control marked "XTAL SELECTIVITY" makes it possible to select the desired amount of selectivity for best results. Turning the control to OFF removes the crystal from the circuit. Rotating the control to the right changes the selectivity from a broad crystal characteristic at "1" suitable for phone reception to a razor-sharp characteristic at "5" for CW reception.

The CRYSTAL PHASING control should be adjusted to give minimum background noises. This setting will depend somewhat on particular conditions. This control may also be used to wipe out an interfering signal. Expert manipulation of the crystal filter usually comes only after a certain amount of practice.

An AUTOMATIC NOISE LIMITER is incorporated in the receiver circuits. No adjustment is required. The circuit is of a type that automatically adjusts itself to maximum effectiveness.

For the reception of Amateur Narrow Band FM signals having carrier frequency deviations not in excess of ± 3KC, the RME 50 is provided with a highly efficient FM noise reduction and detection circuit. This circuit switches in and out of the main circuit of the receiver by means of a switch located directly under the carrier level meter on the panel of the instrument. The carrier meter functions

for FM signals as well as AM and can be used for tuning, being always maximized in reading for exact tuning to any particular signal.

IMPORTANT

The action of the noise limiter is such that a slight amount of distertion is introduced on the signal. Therefore when it is desired to do so the noise limiter may be switch out of the circuit. This is accomplished by pulling "OUT" on the audio gain control. The shaft of this control floats and can be moved in and out with respect to the panel. When the knob is IN toward the panel the noise limiter is IN the circuit; when it is OUT from the panel the noise limiter is OUT of the circuit.

Voltage regulation of critical circuit potentials is provided by a VR-150 regulator tube. Fluctuations in line voltage and circuit voltages due to adjustment of certain receiver controls and the operation of the AVC circuit have a negligible effect on the tuned frequency of the receiver due to the stabilizing effects provided by this regulator.

Any question relative to the performance of the unit should be addressed to the Radio Mfg. Engineers, Inc., Peoria 6, Illinois, who will be very glad to cooperate in assisting in any type of difficulty.

The Radio Mfg. Engineers, Inc. reserve the right to make any changes in the instrument without obligating themselves with respect to prior production.

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Following these operating instructions will be found the Service notes on the RME-50 Receiver.

## SERVICE NOTES FOR THE RME-50 RECEIVER

If the owner has available an accurate signal generator he may, by following the steps outlined in succeeding paragraphs, realign and recalibrate the receiver. If a signal generator is not available he may take the receiver to a reputable service man to have the work done. In addition to the signal generator an insulated screw driver will be required.

NOTE: The "R" meter makes an excellent resonance indicating device. All adjustments are made with the AVC on.

### I.F. ALIGNMENT

The I.F. frequency of the RME-50 is 455 KC. The bandswitch should be set to Band 1. The tuning dial should be turned to the low frequency end (.7MC). The hot lead from the signal generator is clipped to the lug on the detector section (middle) of the tuning condenser. With the signal generator set to 455KC. each padder on the 1st, 2nd and 3rd I.F. transformers (See Fig. 1) are carefully adjusted for maximum response as indicated on the meter.

NOTE: The frequency of the signal generator must be set accurately to that of the crystal. This is done in the following manner.

Turn the crystal selectivity switch to Position 5. Carefully adjust the signal generator frequency until the carrier meter rises sharply. The signal generator is now accurately on the crystal frequency. The crystal selectivity switch is turned to "OFF", and the three I.F. transformers are aligned as before.

### BEAT OSCILLATOR ADJUSTMENT

With the signal generator connected as for aligning I.F. circuits, turn "B.F.O. SWITCH" on and set "B.O. PITCH" control pointer vertical. With an insulated screw driver adjust B.O. padder (See Fig. 1) until zero beat is obtained.

### ALIGNMENT OF THE RADIO FREQUENCY SECTION

Alignment of the radio frequency section of the receiver will affect, principally, the calibration of the receiver. Within certain limits this, of course, will also affect the sensitivity. Small variations in frequency will not materially reduce the sensitivity of the receiver, although they will of course show up as variations in the calibration as indicated by the setting of the MAIN TUNING DIAL. Correction of any variation of calibration on the main dial can be made by following the suggestions outlined in the following paragraphs.

Band 1 includes frequencies between 540 and 1600 K.C. For Band 1 there are two frequency adjustments for adjusting the dial to the proper calibration.

The adjustments are made on the top of the chassis through the dust cover over the Band 1 and 11 coils. The proper holes for making the adjustments are indicated on the top sketch on Fig. 3. There are 6 sets of large and small holes each. The two sets toward the rear of the chassis are the oscillator adjustments. The set toward the front are the RF stage adjustments; and the center set are for the detector. Under the large hole is a padder for adjusting the high frequency end of the range. An iron slug adjusting screw is accessible thru the small holes for adjustment of the low frequency end of the range.

The next step is to choose a station or a signal of accurately known frequency on the low frequency end of the range (for example 600 K.C.) and set the main tuning scale to read this frequency. If the station is not tuned in when the scale indicates its frequency it may be brought in by adjusting the oscillator coil core. This may be done with a small screw driver through the small hole marked "BAND 1 OSC." on Fig. 3. Another station or signal is now selected near the high frequency end of the range (for example 1400 K.C.) If this signal is not heard when the dial is accurately set to its frequency it may be brought in by adjusting the padder under the large hole marked "BAND 1 OSC." by means of an insulated trimmed tool. When this signal is accurately brought in as indicated by a maximum reading on the carrier meter one should go back to the low frequency test point and readjust it if it has changed. It may be necessary to go back and forth several times until both frequencies are accurately calibrated.

The procedure in calibrating and aligning Band 11 is the same for Band 1. On this band two frequencies, such as 1800 and 2800 K.C. may be used.

The four high frequency bands are calibrated and aligned by removing the bottom plate from the receiver. It will be found that an aluminum plate covers the coils. This plate has holes over the 12 padders and all adjustments should be made with this plate in position.

Since the inductance of the coils are accurately adjusted and set at the factory it is necessary only to calibrate one frequency on each band. The same applies to the alignment of the RF and detector padders. Suggested calibration points for each band are as follows:

| | |
|---|---|
| Band 111 | 5 M.C. |
| Band 1V | 9 M.C. |
| Band V | 16 M.C. |
| Band V1 | 30 M.C. |

From the bottom sketch on Fig. 3 on the location of each of the 5 padders for each band may be readily located. Note in particular the location of Band V and V1 padders. Adjustments should be made with insulated screw driver type of trimmer tool.

High frequency beat is used on all bands. That is to say that the oscillator is 455 Kc. higher in frequency than the signal received.

If sufficient input is used, each signal can be received at two points, differing by 910 kilocycles. The other signal is the image or "low beat" signal. The higher frequency signal received, according to the receiver dial, is the proper one and the circuits should be aligned to it.

When using a signal generator or test oscillator to align the set, a resistor of about 300 ohms should be inserted between the signal generator and the antenna connection. This will prevent misaligning of the R.F. stage caused by the connection of the low impedance of the signal generators output circuit across the receiver input.

## CRYSTAL FILTER ADJUSTMENT

In order that the full capabilities of the crystal filter in the Model 50 be realized the following procedure in tuning it is recommended:

On the top of the crystal filter box is a trimmer (Fig. 1). The easiest way to adjust this trimmer is to tune in a station in the broadcast band that is broadcasting music, preferably an orchestra. The XTAL SELECTIVITY switch should be turned to Position 5 and the signal tuned in accurately on the crystal. The XTAL PHASING control should be adjusted to give minimum background noise. The SELECTIVITY control is then turned to Position 1. The trimmer should then be carefully adjusted. As the trimmer is turned, it will be found that the character of the music changes. The trimmer should be set to a point that sounds the most natural. If the adjustment is made carefully, there will be a regular sharpening of the receiver as the SELECTIVITY switch is turned from "OFF" to Position 5.

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## TEST VOLTAGE OBTAINED AT VARIOUS POINTS IN RECEIVER CIRCUIT

Measurements made with a voltmeter having internal resistance of 1000 ohms per volt. Instruments with lower internal resistance may give entirely different readings. NOTE: Line voltage should be 115 volts. Stand-by switch on.

| PLACE TEST PRODS BETWEEN | CORRECT VOLTAGE |
|---|---|
| Radio frequency amplifier plate and ground ..... | 260 volts |
| Radio frequency amplifier screen and ground ..... | 107.5 volts |
| Radio frequency amplifier cathode and ground .... | 3 volts |
| Converter plate (pentode section) and ground .... | 260 volts |
| Converter screen (pentode section) and ground ... | 107.5 volts |
| Oscillator supply and ground ..... | 150 volts |
| First I.F. amplifier plate and ground ..... | 260 volts |

| | |
|---|---|
| First I. F. amplifier screen and ground ..... | 107.5 volts |
| First I. F. amplifier cathode and ground ..... | 3 volts |
| (the same voltage apply to the 2nd I. F. stage) | |
| 6U8 plate and ground ..... | 112.5 volts |
| 6U8 screen and ground ..... | 43 volts |
| 6U8 cathode and ground ..... | 3.1 volts |
| 6V6 plate and ground ..... | 250 volts |
| 6V6 screen and ground ..... | 260 volts |
| 6V6 cathode and ground ..... | 13.5 volts |
| VR-150 plate to ground ..... | 150 volts |
| 5Y3G rectifier filament and ground ..... | 260 volts |

These voltages are subject to a fluctuation of ±15% without indication of material difficulties.

## CONTINUITY CHECKS

Receiver turned off. No jumper between "A" and "G" on antenna terminal strip.

| PLACE TEST PRODS BETWEEN | RESISTANCE |
|---|---|
| A-1 and ground ..... | Infinite |
| A-2 and ground ..... | Infinite |
| "G" and ground ..... | Short |
| RF amp., grid and ground ..... | 1 meg. ±20% |
| Converter grid and ground ..... | Band 1 3.5 ohms |
| | Band 2 1.5 ohms |
| | Band 3 .3 ohms |
| | Band 4 .2 ohms |
| | Band 5 .1 ohms |
| | Band 6 .1 ohms |
| First I. F. grid and ground ..... | 1 meg. ±20% |
| Second I. F. grid and ground ..... | 1 meg. ±20% |
| 6U8 Oscillator grid and ground ..... | 50,000 ohm ±20% |
| B. O. grid and ground ..... | 100,000 ohm ±20% |
| 6AU6 A. F. amp. grid and ground ..... | 250,000 ohms to 0 ohm as audio gain control is rotated |
| 6V6 grid and ground ..... | 250,000 ohms ±20% |
| Oscillator section of tuning condenser and ground | Bands 1,2,3,4,5 Infinite |
| | Band 6 .1 ohm |

## SPECIFICATIONS

| TUBES: | TYPE | |
|---|---|---|
| 1. | 6BJ6 | R. F. Amplifier |
| 2. | 6U8 | Converter |
| 3. | 6BJ6 | 1st I. F. Amplifier |
| 4. | 6BJ6 | 2nd I. F. Amplifier |
| 5. | 6AU6 | Beat Frequency Oscillator |
| 6. | 6AL5 | 2nd Detector & Automatic Noise Limiter |
| 7. | 6AU6 | 1st A. F. Amplifier |
| 8. | 6V6 | Output Amplifier |
| 9. | 5Y3G | Rectifier |
| 10. | VR-150 | Regulator |
| 11. | 6BA6 | FM Limiter |
| 12. | 6AL5 | Ratio Detector |

I.F. Frequency: 455 Kilocycles
Power Consumption at 115 volts: 90 Watts
Audio Output: 3 Watts
Audio Frequency Response: 100 to 5,000 cycles per second ± 2.5 db.
Cabinet Dimensions: Length 22-3/16 inches. Depth 12 in. Height 11 in.
Weight (unpacked): 44-1/4 pounds
Voice Coil Impedance: 6 Ohms

## ALLIGNMENT OF AM-FM DETECTOR CIRCUIT.

Refer to Fig. 1. and connect a 5000 ohm/volt voltmeter (0-50 V range) between test point "A" on detector unit and ground. Place junction switch under carrier level indicator meter in "FM" position and tune a fairly strong Broadcast Signal so that maximum reading on carrier meter is obtained. Now check adjust "A" on detector chassis I.F. transformer for max reading on the test volt meter. When this has been obtained, connect the test volt meter to test point "B" and adjust trimmer "B" for "0" reading of test meter in a manner so that if the adjustment of "B" trimmer is continued the meter reading will go off scale below "zero" or reverse. Leave TI adjustment at the position giving "0" reading on the test volt meter.

# RME-50 PARTS LIST

## RESISTORS

| | |
|---|---|
| 1.1 | 10,000 ohms, 1/2 watt |
| 1.2 | 50,000 ohms, 1 watt |
| 1.3 | 30,000 ohms, Variable |
| 1.4 | 2,000 ohms, 1/2 watt |
| 1.5 | 20,000 ohms, 1/2 watt |
| 1.6 | 300 ohms, 1/2 watt |
| 1.7 | 50,000 ohms, 1/2 watt |
| 1.8 | 2,000 ohms, 1/2 watt |
| 1.9 | 2,000 ohms, 1/2 watt |
| 1.10 | 100,000 ohms, 1/2 watt |
| 1.11 | 10,000 ohms, 1/2 watt |
| 1.12 | 2,000 ohms, 1/2 watt |
| 1.13 | 2,000 ohms, 1/2 watt |
| 1.14 | 10,000 ohms, 1/2 watt |
| 1.15 | 300 ohms, 1/2 watt |
| 1.16 | 2,000 ohms, 1/2 watt |
| 1.17 | 100,000 ohms, 1/2 watt |
| 1.18 | 250,000 ohms, 1/2 watt |
| 1.19 | 250,000 ohms, 1/2 watt |
| 1.20 | 50,000 ohms, 1/2 watt |
| 1.21 | 250,000 ohms, Variable |
| 1.22 | 1 Megohm, 1/2 watt |
| 1.23 | 1,000 ohms, 1/2 watt |
| 1.24 | 1 Megohm, 1/2 watt |
| 1.25 | 100,000 ohms, 1/2 watt |
| 1.26 | 1 Megohm, Variable |
| 1.27 | 250,000 ohms, 1/2 watt |
| 1.28 | 240 ohms, 1 watt |
| 1.29 | 35 ohms, 1/2 watt |
| 1.30 | 20,000 ohms, 1/2 watt |
| 1.31 | 1 Megohm, 1/2 watt |
| 1.32 | 100,000 ohms, 1/2 watt |
| 1.33 | 150 ohms, 1/2 watt |
| 1.34 | 200 ohms, Variable |
| 1.35 | 1,500 ohms, 1/2 watt |
| 1.36 | 10,000 ohms, 1 watt |
| 1.37 | 250,000 ohms, 1/2 watt |
| 1.38 | 100,000 ohms, 1/2 watt |
| 1.39 | 50,000 ohms, 1/2 watt |
| 1.40 | 5,000 ohms, 1/2 watt |
| 1.41 | 2,000 ohms, 1/2 watt |
| 1.42 | 680,000 ohms, 1/2 watt 20% |
| 1.43 | 3,500 ohms, 5 watt 10% |
| 1.44 | 20 ohms, 1/2 watt |
| 1.45 | 4,500 ohms, 10 watt Bleeder |
| 1.46 | 5,500 ohms, 10 watt Bleeder |
| 1.47 | 10,000 ohms, 1/2 watt |
| 1.48 | 50,000 ohms, 1 watt |
| 1.49 | 330 ohms, 1/2 watt |
| 1.50 | 250,000 ohms, 1/2 watt |

## CONDENSERS

| | |
|---|---|
| 2.1 | .1 µfd. 400 volt paper |
| 2.2 | R.F. Section Tuning Condenser |
| 2.3 | Det. Section Tuning Condenser |
| 2.4 | Osc. Section Tuning Condenser |
| 2.5 | .01 µfd. 400 volt paper |
| 2.6 | .01 µfd. 400 volt paper |
| 2.7 | .01 µfd. 400 volt paper |
| 2.8 | .01 µfd. 400 volt paper |
| 2.9 | .01 µfd. 400 volt paper |
| 2.10 | 100 µµfd. Ceramic |
| 2.11 | .01 µfd. 400 volt paper |
| 2.12 | 50 µµfd. Mica |
| 2.13 | 50 µµfd. Mica |
| 2.14 | .01 µfd. 400 volt paper |
| 2.15 | .01 µfd. 400 volt paper |
| 2.16 | .01 µfd. 400 volt paper |
| 2.17 | .01 µfd. 400 volt paper |
| 2.18 | .01 µfd. 400 volt paper |
| 2.19 | .01 µfd. 400 volt paper |
| 2.20 | .01 µfd. 400 volt paper |
| 2.21 | 250 µµfd. Mica |
| 2.22 | 5 µµfd Ceramic |
| 2.23 | 20 µfd. 25 V. electrolytic |
| 2.24 | .1 µfd. 400 volt paper |
| 2.25 | .01 µfd. 200 volt paper |
| 2.26 | .1 µfd. 400 volt paper |
| 2.27 | .01 µfd. 400 volt paper |
| 2.28 | 100 µµfd. Mica |
| 2.29 | 5 µµf. Mica |
| 2.30 | 25 µµf. Variable |
| 2.32 | 200 µµfd. Mica Padder |
| 2.33 | .01 µfd. 400 volt paper |
| 2.34 | 10 µfd.) |
| 2.35 | 15 µfd.) 3 Section Filter Condenser |
| 2.36 | 15 µfd.) |
| 2.37 | .01 µfd. 400 volt paper |
| 2.38 | .01 µfd. 400 volt paper |
| 2.39 | 550 µµfd. Mica |
| 2.40 | 600 µµfd. Mica |
| 2.41 | 1300 µµfd. Mica |
| 2.42 | 1700 µµfd. Mica |
| 2.43 | 3900 µµfd. Mica |
| 2.44 | 100 µµfd. Mica Padder |
| 2.45 | 2-6 µµfd. Variable |
| 2.46 | .1 µfd. 400 volt paper |
| 2.47 | 100 µµfd. Mica - 500 W.V. |
| 2.48) | |
| 2.49) | I.F. Sections of Tuning Condenser |
| 2.50) | |
| 2.51 | 1 µfd. 400 volt paper |

CONDENSERS, CONTINUED

2.52 .002 µfd. Mica
2.53 .002 µfd. Mica
2.54 5 µµfd. Ceramic
2.55 200 µµfd. Mica
2.56 .01 µfd. 600 W.V.
2.57 4-25 Variable Air Trimmer
R F Grid, Ant Trim

SWITCHES

3.1 3 Position, 2 Pole, Stand-by Switch
3.2 S.P.S.T. Line Switch on Tone Control
3.3 D.P.S.T. Beat Oscillator and AVC Shorting Switch
3.4 5 Position, 1 Pole XTAL Switch
3.5 S.P.S.T. Noise Limiter Switch on Volume Control Knob
3.6 S.P.S.T. on Manual Gain Control - Closes with C.C.W. Rotation

INDUCTANCES

4.1 Filter Choke
4.2 B.O. Coil
4.3 Xtal Filter Coil

TRANSFORMERS

5.1 Power Transformer
5.2 Output Transformer
5.3 #3 I.F. Transformer
5.4 #2.I.F. Transformer
5.5 #1 I.F. Transformer

NBF-4 PARTS LIST

Schematic B-297

| No. | Component |
|---|---|

RESISTORS

1.1 220K 1/2 W. ±20% carbon
1.2 1K 1/2 W. ±20% carbon
1.3 10K 1/2 W. ±10% carbon
1.4 68K 1/2 W. ±10% carbon
1.5 68K 1/2 W. ±10% carbon
1.6 10K 1/2 W. ±10% carbon
1.7 47K 1/2 W. ±10% carbon
1.8 100K 1/2 W. ±10% carbon
1.9 100K 1/2 W. ±10% carbon
1.10 270K 1/2 W. ±20% carbon

CONDENSERS

2.1 25µµf. 20% ceramic
2.2 .01µf. paper
2.3 50µµf. 10% Mica
2.4 50µµf. 10% Mica
2.5 500µµf. 20% Mica
2.6 .25µf. 150 volt paper
2.7 1000µµf. 20% Mica
2.8 .1µf. 150 volt paper
2.9 1000µµf. 20% Mica

SWITCH

3.1 SPST Toggle

TRANSFORMER

4.1 Ratio detector transformer 455KC.

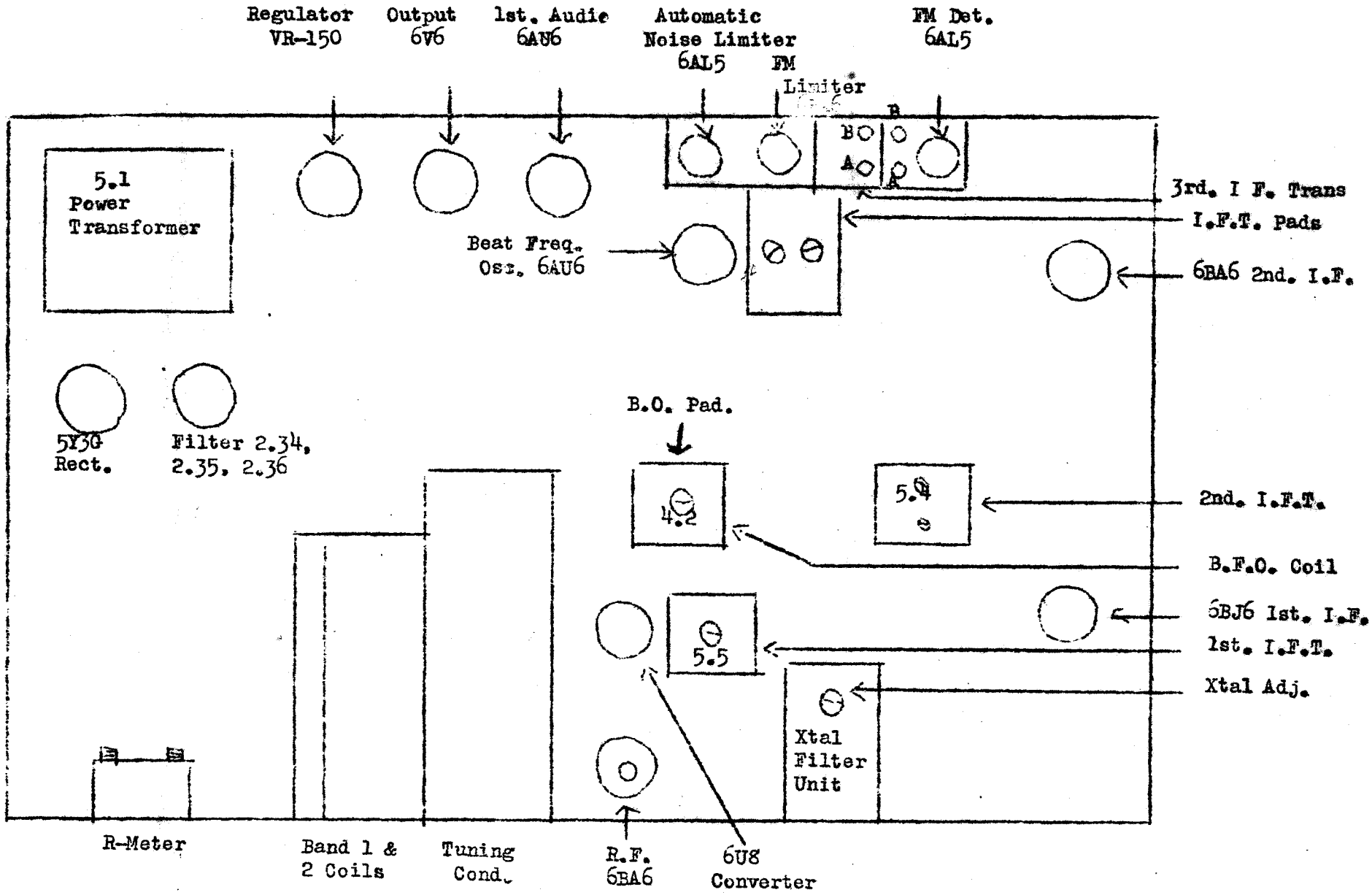
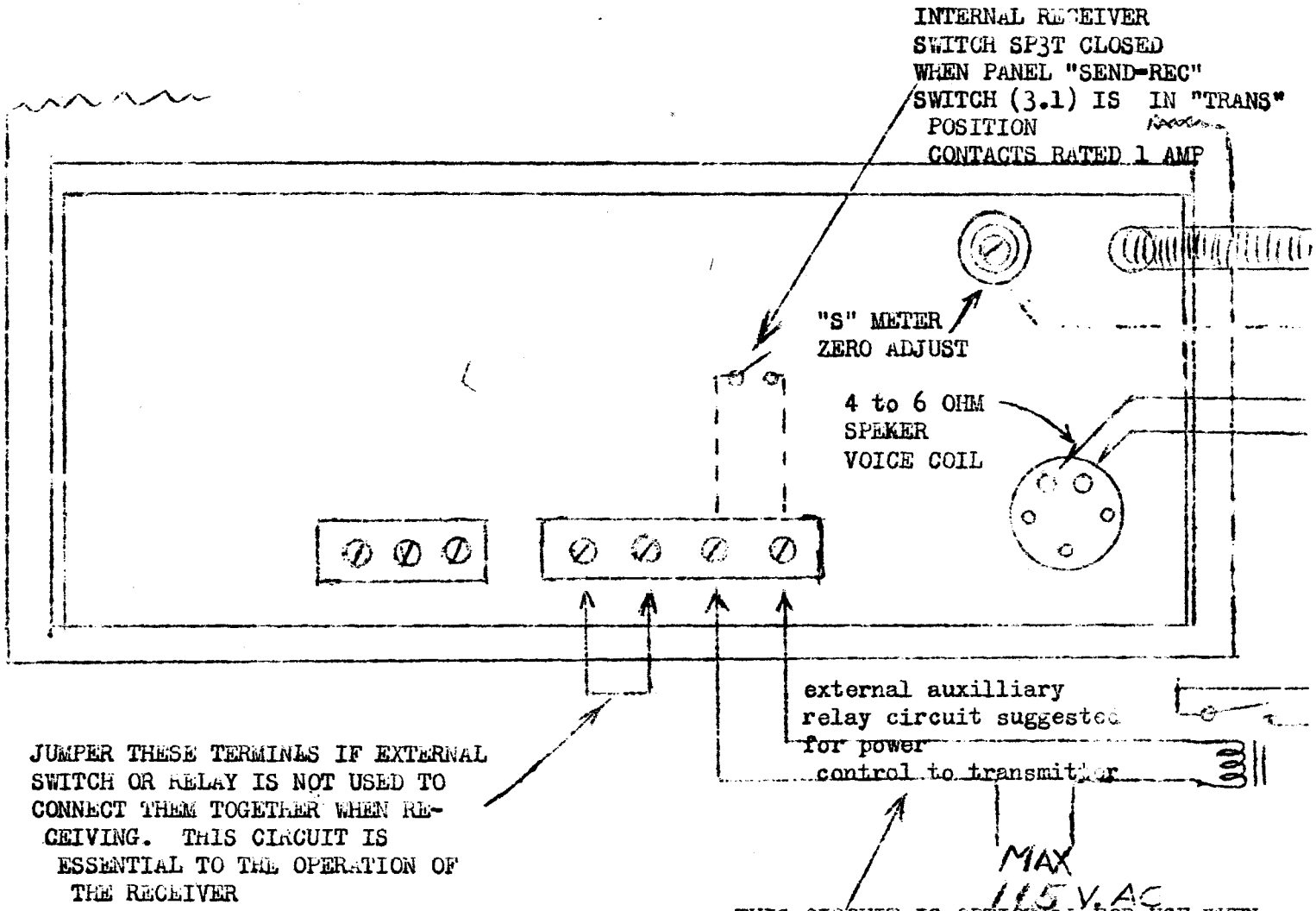



FIGURE 1

RME-50A




JUMPER THESE TERMINALS IF EXTERNAL SWITCH OR RELAY IS NOT USED TO CONNECT THEM TOGETHER WHEN RECEIVING. THIS CIRCUIT IS ESSENTIAL TO THE OPERATION OF THE RECEIVER

THIS CIRCUIT IS OPTIONAL. FOR USE WHEN IT IS DESIRED TO CONTROL TRANSMITTER "ON-OFF" FUNCTION AT RECEIVER PANEL. IT IS NOT A PART OF THE RECEIVER CIRCUIT AND IS NOT ESSENTIAL TO THE PROPER OPERATION OF THE RECEIVER

RME
MODELS , 41, 43, 45, 50

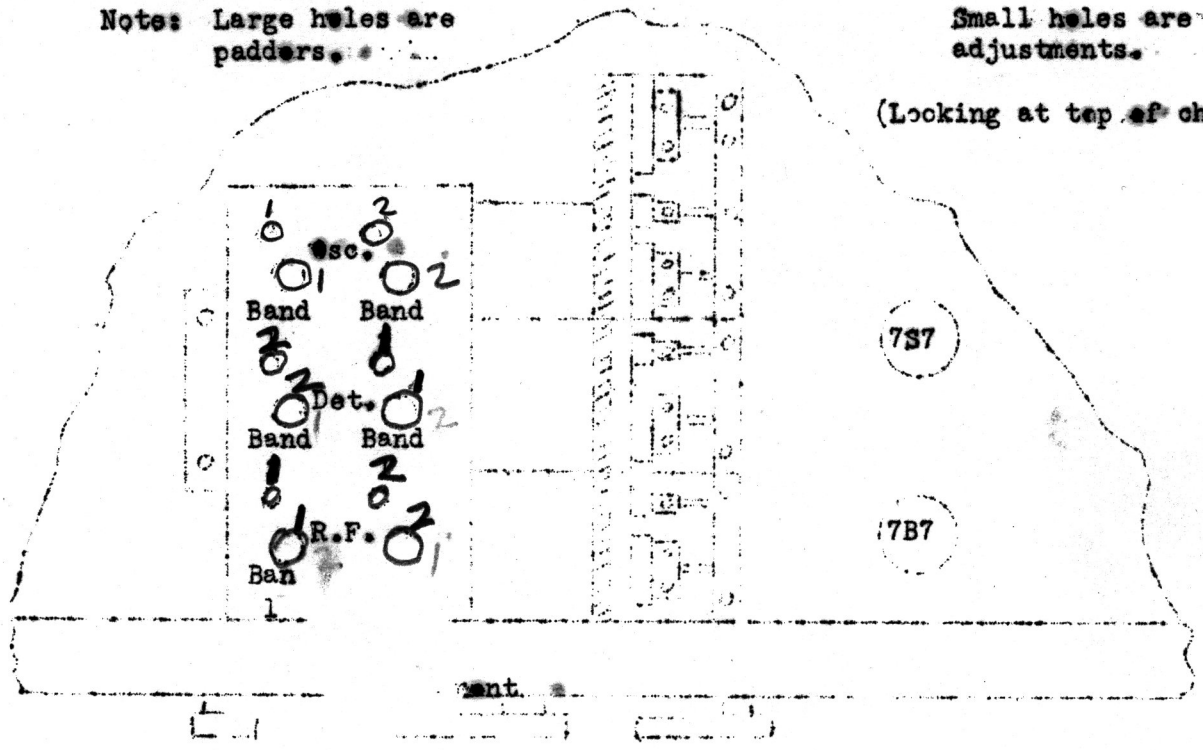
FIG 2

## ALIGNING ADJUSTMENTS

Low Frequency (Bands 1 & 2)

Note: Large holes are padders. Small holes are core adjustments.

(Looking at top of chassis)




High Frequency (Bands 3, 4, 5 & 6)

(Looking at bottom of set with cabinet bottom removed)

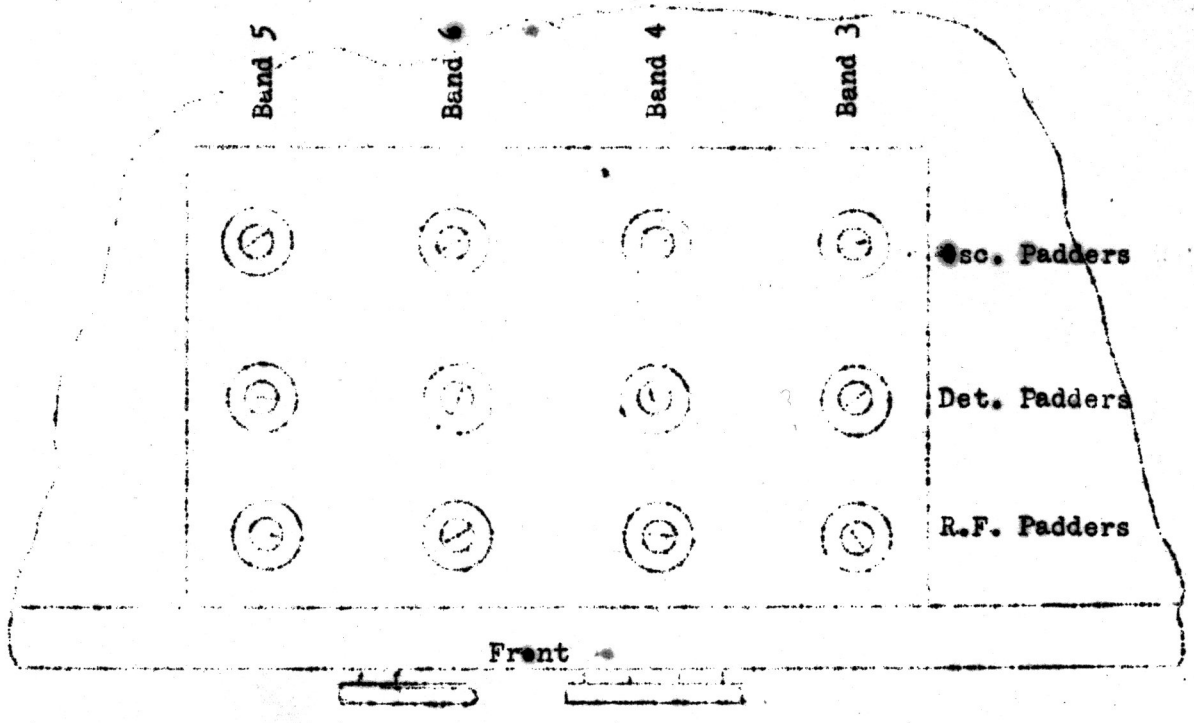



FIGURE 3

# NOTES ON THE INSTALLATION OF THE NBF-4 FM-AM ADAPTOR FOR THE RME-45 RECEIVER

1. INSTALLATION IN RME-45 RECEIVERS WITH SERIAL NUMBERS FOLLOWED BY "B", "C" OR "CB".

The NBF-4 unit plugs into the 7A6 socket of all "B" and "C" Revision receivers without any alteration. A lead wire is provided which is pushed through the rear apron of the chassis (See Fig. 1) and is attached permanently to the high voltage end of the bleeder resistor (See Fig. 2). A toggle switch attachment to the twisted-pair lead is the function control switch. It is supplied with a place marked AM-NBFM and it is to be installed just over the crystal filter control plate, using the template Fig. 3. The switch should be installed so that the toggle handle indicates NBFM when the switch is in the closed position (handle toward the side bearing the connection terminals). After seated in the 7A6 socket, the NBF-4 chassis can be fastened to the receiver chassis by means of a No. 6 self-tapping screw if a hole is drilled through the receiver chassis using the NBF-4 chassis apron hole as a template. Care should be taken not to allow drill to enter receiver chassis too far in order to prevent damage to under chassis circuits and components.

After installation, the 7A6 tube removed from the receiver will no longer be needed. In order to have the receiver in alignment, set the function switch to AM and the receiver to any frequency not occupied by a signal where some background noise is being received (preferably around 7 mcs.) and adjust No. 3 I.F. transformer (See Fig. 4) for maximum noise response. Then, using a 5,000 ohm per volt Voltmeter between the terminal "A" on NBF-4 chassis (See Fig. 4) and ground, adjust trimmer "A" for maximum meter reading on a signal with function switch set to NBFM then with the switch in same position and with the same signal setting of the receiver as for the adjustment of "A" and with meter between terminal "B" and ground, adjust trimmer "B" (Fig. 4) so that meter reads "0". During this adjustment, it will be noted that the meter can be made to read up on scale (positive) or off-scale to the left (negative). "0" reading of the meter is, however, the correct reading for this adjustment of trimmer "B". If I.F. amplifier was in exact alignment with crystal filter, the adjustment of "A" and "B" trimmer will not usually be necessary.

2. INSTALLATION IN RME-45 RECEIVERS WITH SERIAL NUMBERS FOLLOWED BY "A".

The installation of the NBF-4 is made the same as for "B" model receivers after certain wiring changes on the 7A6 socket are made (See Fig. 5).

3. FOR ORIGINAL MODEL RME-45 RECEIVERS (WITH NO LETTER SUFFIX TO THE SERIAL NUMBER).

The installation of the NBF-4 to these receivers is made as for the "B" Model receivers, after the 7A6 socket wiring and other circuit changes are made in accordance with details in Fig. 6.

The schematic of the NBF-4 with parts list is attached.